

THERE IS CLAIMED:

1. A method of controlling the supply of electrical power to an electrically propelled vehicle designed to operate in an external power supply mode or in an autonomous power supply mode as a function of the presence or the absence of an external power supply infrastructure along the route of said vehicle, which includes an uninterrupted power supply bus connected both to an autonomous power supply system on board said vehicle and to an external power supply line that can be connected to an external power supply infrastructure by means of a connection member, in which method connection of said connection member to said external power supply infrastructure is detected by measuring the current flowing in said external power supply line, the presence of a non-zero current in said line indicating the presence of an external power supply infrastructure connected to said connection member.

2. The method claimed in claim 1 of controlling the supply of electrical power to a vehicle, wherein, when said vehicle is in a transient power supply phase during which said uninterrupted power supply bus is simultaneously supplied with energy by said autonomous power supply system and connected to said external power supply infrastructure, the output voltage of said autonomous power supply system is controlled so that the current flowing in said external power supply line is substantially zero.

3. The method claimed in claim 2 of controlling the supply of electrical power to a vehicle, wherein, when said vehicle is moving and supplied with power by said autonomous power supply system only and reaches an area equipped with an external power supply infrastructure, the following steps are carried out:

- detecting connection of said connection member to said

- external power supply infrastructure by the appearance of a non-zero current in said power supply line;
- controlling the output voltage of said autonomous power supply system so that the current flowing in said external power supply line is substantially canceled; and
 - stopping the supply of power by said autonomous power supply system to said uninterrupted power supply bus.

4. The method claimed in claim 2 of controlling the supply of electrical power to a vehicle, wherein, when said vehicle is moving and is supplied with power only by said external power supply line and reaches an area that is not equipped with an external power supply infrastructure, before disconnecting said connection member from said external power supply infrastructure, the following steps are carried out:

- starting said autonomous power supply system so that it supplies power to said uninterrupted power supply bus; and
- controlling the output voltage of said autonomous power supply system so that the current in said external power supply line is substantially canceled.

5. A system for controlling the supply of electrical power to an electrically propelled vehicle designed to operate in an autonomous power supply mode or in an external power supply mode as a function of the presence or absence of an external power supply infrastructure along the route of said vehicle, which includes an uninterrupted power supply bus connected both to an autonomous power supply system on board said vehicle and to an external power supply line that can be connected to an external power supply infrastructure by means of a connection member, which system includes a current sensor for measuring the current flowing in said external power supply line in order to detect connection

of said connection member to said external power supply structure.

6. The system claimed in claim 5 for controlling the supply of electrical power to a vehicle, wherein said autonomous power supply system includes a control module for modifying the output voltage of said autonomous power supply system.

7. The system claimed in claim 6 for controlling the supply of electrical power to a vehicle, wherein said autonomous power supply system is a system including a flywheel for accumulating kinetic energy.

8. The system claimed in claim 5 for controlling the supply of electrical power to a vehicle, wherein said connection member is a pantograph carried by said vehicle and adapted to cooperate with an external power supply infrastructure consisting of an overhead contact line.